UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/441,709	11/16/1999	STEWART GRESTY SMITH	99EDI3175260	4843

27975 7590 07/21/2003

ALLEN, DYER, DOPPELT, MILBRATH & GILCHRIST P.A.
1401 CITRUS CENTER 255 SOUTH ORANGE AVENUE
P.O. BOX 3791
ORLANDO, FL 32802-3791

EXAMINER	
WU, DOROTHY	
ART UNIT	**PAPER NUMBER**
2697	8

DATE MAILED: 07/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/441,709	Applicant(s) SMITH, STEWART GRESTY
	Examiner Dorothy Wu	Art Unit 2697

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *33-64* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *33-64* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *3,5,6* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Drawings

1. New corrected drawings are required in this application because of the objections raised on the Notice of Draftperson's Patent Drawing Review, Form PTO 948. Applicant is advised to employ the services of a competent patent draftsperson outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

Specification

2. The spacing of the lines of the specification is such as to make reading and entry of amendments difficult. New application papers with lines double spaced on good quality paper are required.

3. The specification is objected to for not providing support for first and second filtering algorithms applied to the video data stream in parallel, wherein the final output pixel value is selected from outputs of the first and second filtering algorithms depending on whether a corresponding pixel location is stored in the memory, as recited in claim 50. See below.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 42, 43 and 50 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 42 and 43, the claims recite the limitations of storing locations of the defective pixel values based upon outputs of the first filtering algorithm. However, in claim 36, the base claim for claim 42, the claim recites the steps of storing the locations of defective pixels in memory and then applying filtering algorithms. The order of storing locations and filtering is unclear.

Regarding claim 50, the claim recites the limitation that "the first and second filtering algorithms are applied to the video data stream in parallel, and a final output pixel value is selected from outputs of the first and second filtering algorithms depending on whether a corresponding pixel location is stored in the memory." There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an

international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 33-35 are rejected under 35 U.S.C. 102(e) as being anticipated by Maruo, U.S. Patent 6,163,619.

Regarding claim 33, Maruo teaches a method for processing data in an electronic imaging system (col. 1, lines 6, 16-17), said data comprising a series of pixel values corresponding to pixel sites in the electronic imaging system (col. 1, lines 19-22), the method comprising the step of filtering the data for correcting/modifying defective pixel values (col. 2, lines 41-44). Maruo does not teach that his method is limited to still images, thereby teaching that the filter may be applied to a digital video stream as well.

Regarding claim 34, Maruo teaches median filtering, which reads on a step of filtering that comprises filtering each pixel value based on a plurality of adjacent pixel values (col. 2, line 41).

Regarding 35, Maruo teaches that the step of filtering comprises filtering each pixel value using a current pixel value as part of a data set including the plurality of adjacent pixel values for determining whether a pixel is a defect and whether additional processing should be applied in addition to the initial filtering step, which reads on the use of the current pixel value as part of a data set of adjacent pixel to determine whether to correct/modify the current pixel value and how to correct/modify the current pixel value (col. 2, lines 41-65).

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 51-58, 62-64 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Lougheed, U.S. Patent 4,541,116, included in the applicant's Information Disclosure Statement.

Regarding claim 51, Lougheed teaches a method for filtering a data stream of a digital image (col. 1, lines 7-9), which reads on a series of pixel values corresponding to pixel sites in an electronic imaging device. Lougheed teaches that the method comprising the steps of: filtering each pixel value using a current pixel value as part of a data set including a plurality of adjacent pixel values; sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon a predetermined criteria; and modifying the current pixel value with respect to its rank in the rank order (col. 5, lines 35-48). Lougheed does not teach that his method is limited to still images, thereby teaching that the filter may be applied to a digital video stream as well.

Regarding claim 52, Lougheed teaches that the current pixel value is modified if its rank is greater than the second highest pixel, which reads on a predetermined maximum rank value, or less than the second lowest pixel, which reads on a predetermined minimum rank value (col. 5, lines 38-47).

Regarding claim 53, Lougheed teaches a method further comprising replacing the current pixel value by a pixel value having the predetermined maximum rank value if the rank of the current pixel value is greater than the predetermined maximum rank value; replacing the current pixel value by a pixel value having the predetermined minimum rank value if the rank of the current pixel value is less than the predetermined minimum rank value; and leaving the current pixel value unchanged if the current pixel value has a rank less than the predetermined maximum rank value and greater than the predetermined minimum rank value (col. 5, lines 38-47).

Regarding claim 54, Lougheed teaches that the predetermined maximum rank value is a highest ranking of the plurality of adjacent pixel values, and the predetermined minimum rank value is a lowest ranking of the plurality of adjacent pixel values (col. 5, lines 38-47).

Regarding claim 55, because the method for claim 51 is taught, the apparatus corresponding to the method is also taught.

Regarding claim 56, Lougheed teaches an image processing method for digital data (col. 1, lines 7-9). The sampling circuit is inherently taught.

Regarding claim 57, Lougheed teaches a ranking circuit for sorting the plurality of adjacent pixel values into a rank order based upon a predetermined criteria (col. 5, lines 5-17, and Fig. 1).

Regarding claim 58, Lougheed teaches a comparator (output selector **36**) connected to said ranking circuit **58** for comparing a current pixel value with the plurality of adjacent pixel values of selected ranks, and for generating a first filter output based upon the comparison (col. 5, lines 18-48).

Regarding claim 62, Lougheed teaches an electronic imaging system (col. 1, lines 7-9). The image sensor array and data stream comprising a series of pixel values corresponding to pixel sites in said image sensor array are inherently taught. Lougheed teaches a filter circuit (rank sorter **38**, output selector **36**, and filter order no. **40**) for filtering a data stream for correcting or modifying defective pixel values (col. 5, lines 35-48). Lougheed does not teach that his method is limited to still images, thereby teaching that the filter may be applied to a digital video stream as well.

Regarding claims 63 and 64, Lougheed teaches an electronic imaging system, which reads on an apparatus (col. 1, lines 7-9). The image sensor array and data stream comprising a series of pixel values corresponding to pixel sites in said image sensor array are inherently taught. Lougheed teaches a filter circuit for filtering a video data stream comprising a series of pixel values corresponding to pixel sites in an electronic imaging device, wherein the filtering of each pixel value is based on a current pixel value as part of a data set including a plurality of adjacent pixel values; and a ranking circuit connected to said filter circuit for sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon a predetermined criteria; and the modification of the current pixel value with respect to its rank in the rank order (col. 5, lines 35-48). The modifier is inherently taught. Lougheed does not teach that his apparatus is limited to still images, thereby teaching that the filter may be applied to a digital video stream as well.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 36, 37, 42, 43, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246.

Regarding claim 36, Maruo teaches the method according to claim 33. See above. Maruo teaches the steps of filtering non-defective pixels using one technique, median filtering, which

reads on the first filtering algorithm, and filtering defective pixels using the median filtering and additional processing, which reads on the second filtering algorithm (col. 2, lines 41-65). Maruo does not teach a memory, nor does Maruo teach that the method further comprising the steps of identifying defective pixel values and storing locations of the defective pixel values in the memory. Ninomiya et al does teach a memory (defect memory circuit **25**), and Ninomiya et al also teaches that the locations of the defective pixels are stored in the memory (col. 2, lines 65-67). The step of identifying the defective pixels is inherently taught. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the filtering methods taught by Maruo with the defect memory circuit taught by Ninomiya et al to make an apparatus that stores locations of defect pixels in memory and uses that information to determine how to filter individual pixels. One of ordinary skill would have been motivated to make such a modification to have a ready means of determining defect pixels and treating them accordingly.

Regarding claim 37, Maruo teaches median filtering, which reads on the filtering of each pixel value being based on a plurality of adjacent pixel values; the first filtering algorithm using a current pixel value as part of a data set including the plurality of adjacent pixel values (col. 2, line 41).

As best understood from the language of the claim, regarding claim 42, Maruo teaches that the determination of a defective pixel is based upon the difference between the original image A and filtered image B, which reads upon the determination being based upon an output of the first filtering algorithm (col. 2, lines 44-65). Ninomiya et al teaches that the locations of the defective pixels are stored in the memory (col. 2, lines 65-67).

As best understood from the language of the claim, regarding claim 43, Maruo teaches that the determination of a defect is based upon the magnitude of the difference between the original and filtered images, which reads on the determination of a defective pixel value based on a magnitude of a difference between the current pixel value and the pixel value corresponding to the output of the first filtering algorithm (col. 2, lines 44-52). Ninomiya et al teaches that the locations of the defective pixels are stored in the memory (col. 2, lines 65-67).

Regarding claim 47, Ninomiya et al teaches that the difference between the dark voltage and an average voltage are stored in a noise value memory **60**, which reads on the step of storing a defect value corresponding to a magnitude of the defect exhibited by each defective pixel value (col. 5, lines 49-52).

8. Claims 38-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, and further in view of Lougheed, U.S. Patent 4,541,116, included in the applicant's Information Disclosure Statement.

Regarding claim 38, Maruo in view of Ninomiya teach the method according to claim 37. See above. Maruo in view of Ninomiya do not teach that the first filtering algorithm implements the steps of: sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon a predetermined criteria; and modifying the current pixel value with respect to its rank in the rank order. Lougheed does teach a filtering algorithm implementing the steps of: sorting the current pixel value and the plurality of adjacent pixel values into a rank order based upon a predetermined criteria; and modifying the current pixel value with respect to its rank in the rank order (col. 5, lines 35-47). Therefore, it would have been obvious to one of ordinary

skill in the art at the time the invention was made to substitute the donut filter of Lougheed as the first filtering algorithm taught by Maruo in view of Ninomiya et al to make a method wherein the pixels are initially processed with a donut filter. One of ordinary skill would have been motivated to make such a modification to initially remove spot noise from the image signal.

Regarding claim 39, Lougheed teaches that the current pixel value is modified if its rank is greater than the second highest pixel, which reads on a predetermined maximum rank value, or less than the second lowest pixel, which reads on a predetermined minimum rank value (col. 5, lines 38-47).

Regarding claim 40, Lougheed teaches a method further comprising replacing the current pixel value by a pixel value having the predetermined maximum rank value if the rank of the current pixel value is greater than the predetermined maximum rank value; replacing the current pixel value by a pixel value having the predetermined minimum rank value if the rank of the current pixel value is less than the predetermined minimum rank value; and leaving the current pixel value unchanged if the current pixel value has a rank less than the predetermined maximum rank value and greater than the predetermined minimum rank value (col. 5, lines 38-47).

Regarding claim 41, Lougheed teaches that the predetermined maximum rank value is a highest ranking of the plurality of adjacent pixel values, and the predetermined minimum rank value is a lowest ranking of the plurality of adjacent pixel values (col. 5, lines 38-47).

9. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, and further in view of well-known prior art.

Regarding claim 44, Maruo in view of Ninomiya et al teaches the method of claim 43. See above. Maruo in view of Ninomiya et al do not teach that the location of at least one pixel value having a greatest difference in magnitude from the output of the first filtering algorithm is stored in the memory for each frame of video data. However, the examiner takes Official Notice that it is well-known in the art to store the maximum defective pixel value in memory. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store the greatest defect in memory to assess the variation in error from frame to frame.

10. Claims 45-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, and further in view of Kaplan, U.S. Patent 4,977,521.

Regarding claim 45, Maruo in view of Ninomiya teach the method according to claim 36. See above. Maruo teaches that the filtering of each pixel value is based on the plurality of adjacent pixel values. See above. Maruo in view of Ninomiya do not teach that the second filtering algorithm excludes a current pixel value from a data set including the plurality of adjacent pixel values. Kaplan teaches an algorithm for searching the neighborhood of a defective pixel for non-defective pixel values to use in correcting the defective pixel (col. 11, line 67-col. 12, line 8). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the search for and correction by non-defective pixels taught by Kaplan for the second filtering algorithm taught by Maruo in view of Ninomiya et al to make a method wherein the defective pixels are corrected by non-defective neighboring pixels. One of

ordinary skill would have been motivated to make such a modification to exclude defect noise from the correction calculation to obtain a better correction value for the defect.

Regarding claim 46, Kaplan teaches a filtering algorithm that replaces the current pixel value with a median value of the plurality of adjacent pixel values (col. 12, lines 5-7).

11. Claim 48 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, and further in view of Watanabe et al, U.S. Patent 5,854,655.

Regarding claim 48, Maruo in view of Ninomiya et al teach the apparatus according to the limitations of claim 47. See above. Maruo in view of Ninomiya et al do not teach the step of updating contents of the memory using a predetermined memory management algorithm. Watanabe et al teaches the storage of positions of defective pixels, and the erasing of the pixel location if the pixel does not attain the abnormal level for a predetermined time, which reads on updating the data corresponding to locations of defective pixels using a predetermined memory management algorithm (col. 1, line 62 - col. 2, line 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the method of considering a pixel normal if it no longer attains abnormal levels taught by Watanabe et al with the apparatus taught by Maruo in view of Ninomiya et al to make an apparatus that updates the contents of memory using a predetermined method. One of ordinary skill would have been motivated to make such a modification to stop correcting pixels if they no longer register defective values.

12. Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, in view of Watanabe et al, U.S. Patent 5,854,655, in view of Mahant-Shetti et al, U.S. Patent 6,529,238, and further in view of well-known prior art.

Regarding claim 49, Maruo in view of Ninomiya et al in view of Watanabe et al teach a method according to Claim 48. See above. Maruo in view of Ninomiya et al in view of Watanabe et al do not teach a step of updating the defect value of each defective pixel value based upon an auto-regression function applied to a current pixel value of each defective pixel location stored in the memory, a current output from the second filtering algorithm, and a current stored defect value. Mahant-Shetti et al does teach the step of updating contents in memory that indicate the magnitude of defect for a pixel (col. 7, lines 47-62). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the method taught by Maruo in view of Ninomiya et al in view of Watanabe et al with the technique of updating memory contents taught by Mahant-Shetti et al to make an image correction method that updates correction values. One of ordinary skill would have been motivated to make such a modification to dynamically compensate for the defects in pixel signals. Maruo in view of Ninomiya et al in view of Watanabe et al in view of Mahant-Shetti do not teach an autoregression function to correct the values in memory. The examiner takes Official Notice that it is well-known in the art to use autoregression to update values. It would have been obvious to one of ordinary skill to use a regression function to update defect values in memory to determine if a pixel should still be considered defective.

13. Claim 50 is rejected under 35 U.S.C. 103(a) as being unpatentable over Maruo, U.S. Patent 6,163,619, in view of Ninomiya et al, U.S. Patent 5,113,246, and further in view of well-known prior art.

As best understood from the language of the claim, regarding claim 50, Maruo in view of Ninomiya et al teach the method according to claim 36. See above. Maruo in view of Ninomiya et al do not teach that the first and second filtering algorithms are applied to the video data stream in parallel, and a final output pixel value is selected from outputs of the first and second filtering algorithms depending on whether a corresponding pixel location is stored in the memory. The examiner takes Official Notice that it is well-known in the art to multiplex different filtered signals to select the desired data. Therefore, it would have been obvious to one of ordinary skill to multiplex the filtered data streams and select one according to whether it corresponds to a defective pixel.

14. Claim 59 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lougheed, U.S. Patent 4,541,116, in view of Maruo, U.S. Patent 6,163,619, and further in view of Kaplan, U.S. Patent 4,977,521.

Regarding claim 59, Lougheed teaches the apparatus according to Claim 58. See above. Lougheed does not teach a median circuit connected to said ranking circuit for determining a median value of the plurality of adjacent pixel values and for generating a second filter output equal to the median value. Maruo teaches the practice of performing additional filtering upon defective pixels after an initial filtering step (col. 2, lines 41-65). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to connect a

filtering circuit taught by Maruo to a ranking circuit taught by Lougheed to make an apparatus that may subject the image signals to a series of filters. One of ordinary skill would have been motivated to make such a modification to obtain an image of higher quality. Lougheed in view of Maruo do not teach a median circuit. Kaplan teaches a filtering algorithm that replaces the current pixel value with a median value of the plurality of adjacent pixel values, which reads on the median circuit (col. 12, lines 5-7). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the median filter taught by Kaplan as the circuit connected to the ranking circuit taught by Lougheed in view of Maruo. One of ordinary skill would have been motivated to make such a modification to use median filtering for eliminating spot noise.

15. Claims 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lougheed, U.S. Patent 4,541,116, in view of Maruo, U.S. Patent 6,163,619, in view of Kaplan, U.S. Patent 4,977,521, and further in view of Ninomiya et al, U.S. Patent 5,113,246.

Regarding claim 60, Lougheed in view of Maruo in view of Kaplan teach the apparatus according to claim 59. See above. Maruo teaches that the determination of a defect is based upon the magnitude of the difference between the original and filtered images, which reads on the determination of a defective pixel value based on a magnitude of a difference between the current pixel value and the pixel value corresponding to the output of the first filtering algorithm (col. 2, lines 44-52). Lougheed in view of Maruo in view of Kaplan do not teach a memory connected to said comparator for storing pixel locations selected based upon the first filter output. Ninomiya et al teaches that the locations of the defective pixels are stored in the memory

(col. 2, lines 65-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to store the pixel locations taught by Maruo in the memory taught by Ninomiya et al to make an apparatus in which the pixel locations of defective pixels are stored in memory based upon a result of the first filter. One of ordinary skill would have been motivated to make such a modification to use derive a simple technique for identifying and correcting defective pixels.

Regarding claim 61, Ninomiya et al teaches that the apparatus has a default method of processing pixel signals until defect position memory coincides with the position signal, in which case the apparatus switches methods to appropriately handle the defective pixel (col. 5, lines 62-col. 6, line 2). Lougheed teaches a ranking circuit for generating a first noise filter, and Kaplan teaches a second, median filter for obtaining a corrected, non-defective pixel value. See above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Wu whose telephone number is 703-305-8412. The examiner can normally be reached on Monday-Friday, 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached on 703-305-4863.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, DC 20231

Or faxed to:

703-872-9314

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is 703-306-0377.

Dorothy Wu

DW
July 14, 2003

ANDREW CHRISTENSEN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600